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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,661	07/20/2001	Vishnu K. Agarwal	500431.04	3239

7590 04.16.2002  
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EXAMINER
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GOUDREAU, GEORGE A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 04/16/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-910661

Applicant(s)

Agarwal

Examiner

George Gondreau

Group Art Unit

1763

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE

3

MONTH(S) FROM THE MAILING DATE

OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

☒ Responsive to communication(s) filed on

(1-02' to 2-02') (i.e. - papers #5-7)

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

☒ Claim(s) 68-72 is/are pending in the application.

Of the above claim(s) is/are withdrawn from consideration.

☐ Claim(s) is/are allowed.

☒ Claim(s) 68-72 is/are rejected.

☐ Claim(s) is/are objected to.

☐ Claim(s) are subject to restriction or election requirement

## Application Papers

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some\* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other \_\_\_\_\_

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15. This action will not be made final due to the new grounds of rejection.
16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 68-71 are rejected under 35 U.S.C. 102(b) as being anticipated by either Naoki (JP 08-064,561), or Meikle et. al. (5,439,551).

Naoki discloses a process for monitoring the progress of a cmp polishing process which is used to planarize a P doped SiO<sub>2</sub> layer (14) on top of an undoped SiO<sub>2</sub> layer (13) on a wafer by detecting the change in concentration of P ions in the cmp slurry effluent. The cmp polishing process is then automatically terminated upon the detection of the endpoint of the cmp polishing process. The cmp slurry effluent is vaporized using a heater (17) in the cmp polishing platen (15). The vaporized cmp effluent is then collected using a sampling tube which is connected to a mass spectrometer (18). This is discussed specifically in the abstract; and discussed in general on pages 1-4. This is shown specifically in figures 1-2; and shown in general in figures 1-6.

Meikle et. al. disclose a process for monitoring the progress of a cmp polishing process which is used to planarize a layer of material on a semiconductor wafer. The cmp polishing process is then automatically terminated upon the detection of a change in the concentration of Ti ions in the cmp slurry. The cmp slurry effluent is withdrawn from the cmp polishing platen (36) using a sampling tube (52) which is coupled to a mass spectrometer (54) wherein the cmp slurry is

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analyzed for its Ti content using a mass spectrometer. This is discussed specifically in columns 4, 6; and discussed in general in columns 1-10. This is shown specifically in figure 5; and shown in general in figures 1-6.

It would have been inherent that a vaporizer is used to convert the liquid cmp effluent sample into a vapor prior to admitting it to the mass spectrometer in the apparatus/ process taught by Meikle et. al. based upon the fact that the mass spectrometer is incapable of analyzing liquid samples, and can only analyze gaseous samples. Thus, some sort of means would have needed to have been provided to vaporize the liquid cmp slurry effluent sample prior to admitting the sample to the mass spectrometer for analysis. The examiner cites the case law listed below of interest to the applicant in this regard.

In re Swinehart (169 U.S.P.Q. 226 (CCPA )) and In re Best (195 U.S.P.Q. 430 (CCPA )) state that when an examiner has reasonable basis for believing that functional characteristics asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be inherent characteristics of the prior art, the examiner possesses the authority to require an applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied upon.

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18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 69, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Meikle et. al. as applied in paragraph 17 above.

Meikle et. al. as applied in paragraph 17 above fail to disclose the following aspects of applicant's claimed invention:

- the specific usage of a vaporizer which is coupled to the slurry sampling tube to vaporize the slurry sample prior to admitting it to the mass spectrometer; and
- the specific usage of a slurry to filter out abrasive particles from the slurry sample prior to admitting the sample to the vaporizer

It would have been obvious to one skilled in the art to employ a vaporizer to convert the liquid cmp slurry effluent sample which is withdrawn from the cmp polishing platen in the apparatus/ process taught by Meikle et. al. based upon the following. The usage of a vaporizer to convert a liquid sample to be analyzed in a mass spectrometer to a vapor prior to admitting the sample to the mass spectrometer is conventional or at least well known in the chemical instrumental arts. (The examiner takes official notice in this regard.) Further, this would have simply provided a means for desirably facilitating the analysis of the liquid cmp slurry effluent

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sample by a mass spectrometer by converting the sample into a vapor form in which the mass spectrometer can more accurately, and more easily analyze the contents of the sample.

It would have been obvious to one skilled in the art to provide a means for filtering out the abrasive slurry particles from the liquid cmp slurry effluent sample which is withdrawn from the cmp polishing platen in the process taught above based upon the following. The usage of a filter to remove solid particles from a liquid sample to be analyzed by a mass spectrometer is conventional or at least well known in the chemical instrumentation arts. (The examiner takes official notice in this regard.) Further, the specific usage of a filter to remove abrasive particles from the liquid cmp effluent sample in the process taught above would desirably provide means for preventing the undesirable clogging of the tube which feed the sample to be analyzed through the mass spectrometer.

20. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

21. Applicant's declaration which swears behind the date of the previous prior art references which were used by the examiner to reject applicant's claims is noted of record. Accordingly, the previous grounds of rejection of applicant's claims have been dropped by the examiner based upon applicant's declaration.

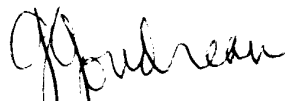
22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -306-3186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.



George A. Goudreau/gag

Primary Examiner

AU 1763